

AMENDMENTS TO THE CLAIMS

Please amend Claims 1, 3-9, 11 and 12.

Please add New Claims 14-16.

1. (Currently amended) A method ~~[[of]]~~ for electrodepositing a conductive material ~~electrodeposition~~ on a workpiece surface having a cavity to form a substantially flat conductive layer, the method comprising:

determining a transition current density that is capable of filling the cavity with the conductive material and forming a substantially flat profile over an opening of the cavity; and

performing an electrodeposition process on a plurality of workpieces, each electrodeposition process comprising:

applying an initial process current density as the workpiece surface enters the process solution ~~to partially fill the cavity with the conductive material,~~ wherein the initial current density is lower than the transition current density;

applying a first process current density to fill ~~a remainder~~ of the cavity with the conductive material and form a substantially flat profile over the opening of the cavity, wherein the first process current density is substantially the same as the transition current density; and

applying a second process current density to form a substantially flat conductive layer over the cavity, wherein the second process current density is higher than the transition current density.

2. (Previously presented) The method of claim 1, wherein the first process current density is applied for a first predetermined time and the second process current density is applied for a second predetermined time.

3. (Currently amended) The method of claim 2, further comprising applying a third process current density before applying the first process current density and after applying the initial process current density ~~for a third predetermined time~~, wherein the third process current density is higher than the second process current density, and wherein the third process current density is applied for a third predetermined time that is shorter than the first ~~and the second~~ predetermined ~~[[times]]~~ time.

4. (Currently amended) The method of claim 2, further comprising applying a third process current density after applying the first current density and before applying the second process current density ~~for a third predetermined time~~, wherein the third process current density is higher than the second process current density, and wherein the third process current density is applied for a third predetermined time that is shorter than the first and the second predetermined ~~[[times]] time.~~

5. (Currently amended) The method of claim 1, further comprising ~~applying the first process current density for a first predetermined time and~~ applying a pulsed process current density that ~~varies between a third process current density and~~ is greater than the first process current density ~~for a second predetermined time~~, wherein the ~~third process current density is higher than the second process current density~~ pulsed process current density comprises one or more individual pulses.

6. (Currently amended) The method of claim 1, further comprising ~~applying the first process current density for a first predetermined time and~~ applying a first pulsed process current density that varies between the second process current density and the first process current density ~~for a second predetermined time~~, wherein the first pulsed process current density comprises one or more individual pulses.

7. (Currently amended) The method of claim 6, further comprising applying a second pulsed process current density ~~for a third predetermined time after applying the first pulsed process current density~~, the second pulsed process current density comprising one or more individual pulses, wherein the second pulsed process current density ~~varies between a third process current density and~~ is greater than the first pulsed process current density ~~second process current density~~, wherein the ~~third process current density is higher than the second process current density.~~

8. (Currently amended) The method of claim 1, further comprising repeating applying the first process current density and the second process current density ~~multiple times.~~

9. (Currently amended) A method ~~[[of]]~~ for electrodepositing a conductive material ~~electrodeposition~~ on a workpiece surface, the workpiece surface having a cavity ~~to form a substantially flat conductive layer~~, the method comprising:

determining a transition current density that is capable of filling the cavity with the conductive material and forming a substantially flat profile over an opening of the cavity; and

performing an electrodeposition process on a plurality of workpieces by depositing the conductive material onto the surface of the workpieces using a variable current density including an initial process current density ~~to partially fill the cavity~~, a first process current density to substantially fill ~~a remainder of~~ the cavity and form a substantially flat profile over the opening of the cavity, and a second process current density to form the substantially flat conductive layer over the cavity,

wherein the first process current density is substantially the same as the transition current density, and the second process current density is higher than the transition current density.

10. (Original) The method of claim 9, wherein the first process current density is applied for a first predetermined time and second process current density is applied for a second predetermined time.

11. (Currently amended) The method of claim 10, wherein the first predetermined time **[[period]]** is equal to the second predetermined time period.

12. (Currently amended) The method of claim 10, wherein the first predetermined time **[[period]]** is longer than the second predetermined time period.

13. (Original) The method of claim 10, wherein the first predetermined time is shorter than the second predetermined time.

14. (New) The method of claim 2, wherein the first predetermined time is equal to the second predetermined time.

15. (New) The method of claim 2, wherein the first predetermined time is longer than the second predetermined time.

16. (New) The method of claim 2, wherein the first predetermined time is shorter than the second predetermined time.